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Examiner	:	K. Bahta
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REPLY BRIEF

This Reply Brief is being submitted in response to the Examiner's Answer filed on November 3, 2006.

In Section 9 of the Examiner's Answer (Grounds of Rejection), the Examiner has set forth the identical grounds for rejection as found in the Final Office Action. These grounds for rejection, therefore, are deficient for the reasons set forth in Appellants' opening brief. The Board is requested to reverse the Examiner's rejection and allow the pending claims for the reasons set forth in Appellants' opening brief.

In Section 10 (Response to Argument), for many of the claims, the Examiner summarizes (often incorrectly) Appellants' argument and then reproduces text directly from Matsumiya without any explanation as to how the reference or text is being applied to the pending claim

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language. In most cases, the cited text does not even address the claim language or any argument from the Appellants' Brief. As discussed below, for most of the pending claims, because the Examiner is unable to point to any relevant disclosure or suggestion in Matsumiya, the Examiner has implicitly conceded that Matsumiya does not teach or disclose the claim limitations. In particular, the Examiner still cannot find within the disclosure of Matsumiya any teaching or even suggestion that a coordinate measurement program be performed on a machine tool and not on a coordinate measurement machine, let alone an enabling disclosure of how one of skill would execute a measurement program on a machine tool.

Matsumiya is directed to the admitted prior art in which coordinate measurements are performed on one machine, a coordinate measurement machine, and machining functions are performed on a separate machine, such as one that is only configured to perform milling, grinding or other like functions. The second sentence of the abstract of Matsumiya explicitly states that a measurement program for use with a measuring machine is produced. Additionally, Figure 1 shows a workpiece (30) being moved from a machine tool (26) to a separate measuring machine (31). In short, Matsumiya does not teach or suggest performing coordinate measurement on a machine tool or generating a machine tool program to do so.

The present invention includes claims that are directed to systems and methods in which coordinate measurement is performed on the same machine as machining functions. By keeping a workpiece fixtured to the same machine for both machining and coordinate measurement, undesirable delays and changes to workpiece geometry can be avoided. Further, because a coordinate measurement machine requires a large capital investment, the use of an existing machine tool for coordinate measurement can be desirable in many cases. (See page 2, lines 5-20 of the application).

1. Independent Claims 1, 31, 86, 92 and Dependent Claims 3-6, 8-13, 15, 16, 18-20, 23-26, 33-36, 38-45, 47, 48, 50-53 and 87-91

In response to Appellants' arguments regarding these claims, the Examiner simply quotes the text from column 8, lines 12-44 of Matsumiya without any explanation other than italicizing or bolding several irrelevant words of the text. The bolded words include: "commands," "dimensional tolerances," "information particular to setting of initial coordinate systems" and "calling of coordinate systems." In their Brief, Appellants explain that Matsumiya teaches performing coordinate measurements only with a coordinate measurement machine, and not with a machine tool. The bolded words do not include the term "machine tool." That is because the measurement program (50) referenced in column 8, lines 12-44 of Matsumiya is not executed on a machine tool, as evidenced by column 8, lines 54-58: "[T]hus, according to the present invention, the measurement program 50 can easily be produced by analyzing the NC program 40. FIG. 8A and FIG. 8B show a part of the measurement program produced by the measurement program producing method according to the present invention." The titles of each of FIGS. 8A and 8B read, "EXAMPLE OF MEASUREMENT PROGRAM FOR THREE-DIMENSIONAL COORDINATE MEASURING MACHINE PRODUCED FROM NC MACHINING PROGRAM HAVING TOLERANCE INFORMATION" (emphasis added). It is apparent from this disclosure that measurement program (50) of Matsumiya is executed on a measuring machine and not on a machine tool. Because the only disclosure to which the Examiner has pointed, i.e., column 8, lines 12-44, contains no disclosure or suggestion whatsoever regarding performing coordinate measurement on a machine tool, the Examiner has not refuted Appellants' argument that Matsumiya does not disclose performing coordinate measurement with a machine tool.

2. Dependent Claims 2 and 32

Appellants argue that Matsumiya does not disclose executing a machine tool program to produce coordinate measurement data. In the Examiner's Answer, the Examiner disagrees and points to column 4, lines 58-65 and Figure 2 of Matsumiya. Column 4, lines 58-65 does not support the Examiner's position. In fact, this portion of Matsumiya includes a statement that

actually refutes the Examiner's position and supports Appellants' argument. This portion of Matsumiya states that "a measuring machine 31 executes coordinate measurement of the workpiece 30 according to the measurement program of a measurement control apparatus 32." Here, Matsumiya is explicitly stating that a measuring machine (not the NC machine) is performing coordinate measurement according to a measurement program, as opposed to claim 2 which recites a machine tool that performs coordinate measurements according to a machine tool program. The remainder of the text cited by the Examiner states that the measured results are fed back to the NC program execution means 27 of the NC apparatus 25 via a measurement result analyzing means 33. Here, Matsumiya is explaining that the NC program execution means is receiving measuring data that was generated by the coordinate measurement machine, and not the NC machine or machine tool. Accordingly, the NC program execution means is not taught to execute a machine tool program to produce coordinate measurement data, as recited in claim 2. Rather, the NC program execution means of Matsumiya only receives data from the coordinate measurement machine.

3. Dependent Claims 7 and 37

Claim 7 depends from claim 6 and claim 37 depends from claim 36. Each of claims 6 and 36 recite generating an additional machine tool program and each is dependent from claims 1 and 2 respectively. Each of claims 7 and 37 recites that the additional machine tool program comprises instructions to control a machine tool to perform coordinate measurements. In the Examiner's Answer, column 8, lines 12-44 are repeated. As discussed above, column 8, lines 12-44 is directed to a measurement program that includes instructions to control a coordinate measurement machine (and not a machine tool) to perform coordinate measurements. Because the Examiner cannot point to any disclosure or suggestion in Matsumiya of a machine tool program which includes instructions to control a machine tool to perform coordinate measurements, the Examiner's Answer implicitly concedes that Matsumiya does not teach this feature.

4. Dependent Claims 14 and 46

The Examiner's Answer mischaracterizes Appellants' argument regarding claims 14 and 46. The Examiner's Answer states that Appellants argue in the Appeal Brief that Matsumiya does not disclose an application integrated within a control panel of the machine tool controller. Appellants' argument actually is that Matsumiya does not disclose the generation of a machine tool program as being performed by an application integrated within a control panel of the machine tool controller. (Appeal Brief, page 11, third paragraph). In the Examiner's Answer, the Examiner points to column 4, lines 35-50 which describes the typical control of a machine tool. The cited portion of Matsumiya is not directed to the generation of an NC program, but rather is directed to executing an NC program. Figure 1 and column 4, lines 28-29 ("The NC program and the tool list created in such a manner are supplied to an NC apparatus 25") indicate that the NC program producing means (20) of Matsumiya is, in fact, separate from the NC apparatus (25). Thus, this limitation is not shown or suggested by Matsumiya.

5. Dependent Claim 17

The Examiner again mischaracterizes Appellants' argument regarding claim 17. The Examiner's Answer states that Appellants argue that Matsumiya does not disclose that the machine tool program comprises combining a machine definition with a dimensional metrology path definition. Appellants' argument actually is that the act of generating the machine tool program comprises combining a machine definition with a dimensional metrology path definition. (Appeal Brief, page 12, first full paragraph). The Examiner points to Figures 3 and 7-9 of Matsumiya and states that Matsumiya discloses a tool list definition and three dimensional coordinate measuring path definition, and that the measurement control apparatus (32) sends a command indicating measurement paths defined by the predetermined measurement program to the probe of the measuring machine (see column 9, lines 7-10). As conceded by the Examiner, the command is sent to the measuring machine. Because the measurement control apparatus is sending a command to the probe of the measuring machine, which only performs a measurement function and not a machining function, the act of generating a machine tool program (which program performs a machining function) is not taught or suggested by the portion of Matsumiya

cited by the Examiner. The lack of any explanation of how Matsumiya teaches an act of generating a machine tool program which comprises combining a machine definition with a dimensional metrology path definition represents an implicit concession that this feature is not disclosed.

6. Dependent Claim 21

In response to the argument regarding claim 21, which recites translating the dimensional metrology program into the machine tool program, the Examiner reproduces column 6, lines 38-43 of Matsumiya. This portion of Matsumiya is directed to converting the coordinate systems prepared for NC machining to the three-dimensional coordinate systems for measurement. This conversion of coordinate systems involves a conversion that occurs in a direction opposite to the translation recited in the claim. That is, Matsumiya describes converting the coordinate systems of a machine tool program to the coordinate systems of a coordinate measurement machine for performing a measurement on the coordinate measurement machine. In contrast, claim 21 is directed to translating a dimensional metrology program (such as a coordinate measurement machine program) to a machine tool program for performing a coordinate measure on the machine tool. Accordingly, the Examiner's Answer does not address Appellants' arguments regarding the features of claim 21. Matsumiya does not disclose or suggest this act of claim 21.

7. Dependent Claims 22 and 49

Each of claims 22 and 49 recites that generation of the machine tool program comprises removing dimensional metrology program commands from the dimensional metrology program. In the Examiner's Answer, the Examiner points to column 5, lines 24-43 and reproduces column 5, lines 38-43, "[T]he machining shape information extracting division 34 extracts the quality information from the actual machining NC program and directly outputs the quality information to the measurement program producing division 36." (Emphasis supplied). This portion of Matsumiya is clearly directed to extracting information and not to removing commands. Furthermore, the information is extracted from a machining program – not from a dimensional metrology program, as recited in claims 22 and 49. Because the Examiner is unable to point to

any teaching or suggestion of removing dimensional metrology commands from a dimensional metrology program to generate a machine tool program, the Examiner's Answer contains an implicit concession that Matsumiya does not teach this feature.

8. Dependent Claims 27 and 54

The Examiner's Answer again mischaracterizes Appellants' arguments regarding claims 27 and 54. Appellants' actual argument is that Matsumiya does not disclose that the generation of the machine tool program comprises providing indicators within the machine tool program, the indicators including information regarding the quantity of coordinate measurements associated with a workpiece feature. (Appeal Brief, page 13, second paragraph). The Examiner reproduces column 8, lines 12-44 in the Examiner's Answer, but this portion of Matsumiya does not teach providing indicators within a machine tool program regarding the quantity of coordinate measurements associated with a workpiece feature. Instead, the first two sentences of this portion of Matsumiya are directed to using machining quality information, such as tolerance information, from an NC program analyzing division. These two sentences do not discuss providing an indicator including information regarding a quantity of coordinate measurements associated with a workpiece feature. The remainder of the cited portion of Matsumiya is directed to information which is not included in the NC program (see Column 8, lines 44-47).

In the Final Office Action, the Examiner pointed to column 6, lines 26-43 with regard to this feature. Here again, Matsumiya is not teaching that the generation of a machine tool program includes the provision of indicators within the machine tool program regarding a quantity of measurements associated with a workpiece feature. Instead, this portion of Matsumiya is directed to extracting quality information from an existing NC program and providing it to a measurement program producing means. The measurement program producing means of Matsumiya (reference designation 36 in Figure 2) produces a measurement program (50) for use only with a measuring machine (reference designation 31 in Figure 9) and not a machine tool. Accordingly, neither the Final Office Action nor the Examiner's Answer addresses the claim feature discussed in the Appeal Brief.

9. Dependent Claim 91

The Examiner's Answer also mischaracterizes Appellants' argument regarding claim 91. Appellants' actual argument is that Matsumiya does not disclose that at least one provided indicator comprises information regarding a <u>quantity</u> of coordinate measurements associated with a workpiece feature. (Appeal Brief, page 13, third paragraph). The Examiner points to column 8, line 54 through column 9, line 4 and reproduces column 8, line 66 through column 9, line 4, which reads, "It is also possible to improve the relationship between the NC machining program and the measurement program by feeding-back the actual machining shapes to the work control by the machine tool while measuring the machining shapes during actual machining operation by the measurement program." This portion of Matsumiya is merely explaining that measurements of the workpiece may be obtained (by a measurement program controlling a measuring machine – see Figure 1) during the machining process and fed back to the machine tool control. This portion of Matsumiya does not disclose or suggest including an indicator comprising information regarding a <u>quantity</u> of coordinate measurements associated with a workpiece feature. Therefore, claim 91 is neither disclosed nor suggested by Matsumiya.

10. Independent Claims 28 and 93, and Dependent Claims 29-30

Each of independent claims 28 and 93 recites a program generator to generate, from a dimensional metrology program, a machine tool program including instructions to control a machine tool to perform coordinate measurements. In the response, column 8, lines 12-44 are again quoted without any explanation. As discussed above, this portion of Matsumiya does not contain any disclosure or suggestion whatsoever regarding performing coordinate measurement on a machine tool. Accordingly, no program generator configured as recited in each of claims 28 and 93 is taught or suggested by Matsumiya.

11. Independent Claim 55 and Dependent Claim 56

In response to Appellants' arguments regarding claims 55 and 56, the Examiner again reproduces column 8, lines 12-44 of Matsumiya without explanation. Independent claim 55

recites, among other limitations, a system comprising means for generating a machine tool program including instructions to control a <u>machine tool</u> to perform coordinate measurements, wherein the machine tool program is executable on a machine tool controller. The only disclosure to which the Examiner has pointed, i.e., column 8, lines 12-44, contains no disclosure or suggestion whatsoever of performing coordinate measurements on a machine tool. Therefore, the Examiner has not refuted Appellants' argument that Matsumiya does not disclose means for generating a machine tool program including instructions to control a <u>machine tool</u> to perform coordinate measurements.

12. Independent Claims 57, 76, and 77 and Dependent Claims 59-61, 63, 64, 66-68 and 71-75

Appellants' argument regarding these claims is mischaracterized in the Examiner's Answer. Appellants' actual argument is that Matsumiya does not teach or suggest generating a machine tool program that includes instructions to control a machine tool to perform coordinate measurements, and also does not teach or suggest analyzing coordinate measurement data that was generated by an execution of such a machine tool program. (Appeal Brief, page 15, third full paragraph). The Examiner incorrectly characterizes Appellants' argument as being that Matsumiya does not disclose generating a machine tool program from a dimensional metrology program. This is not Appellants' argument.

To refute the Examiner's version of Appellants' argument, the Examiner again reproduces column 8, lines 12-44 without explanation. This portion of Matsumiya, as discussed above, does not teach or suggest generating a machine tool program that includes instructions to control a machine tool to perform coordinate measurements.

13. Dependent Claim 58

Appellants' argument regarding claim 58 is again mischaracterized in the Examiner's Answer. The Examiner's Answer states that Appellants' argument is that Matsumiya does not disclose <u>generating</u> a machine tool program that includes instructions to control a machine tool to perform coordinate measurements. In fact, Appellants' argument regarding claim 58 is that

Matsumiya does not teach or suggest <u>executing</u> a machine tool program that includes instructions to control a machine tool to perform coordinate measurements.

Regardless, the portion of Matsumiya reproduced in the Examiner's Answer does not teach or suggest generating a machine tool program that includes instructions to control a machine tool to <u>perform coordinate measurements</u>. Thus, Matsumiya does not teach or suggest this feature.

14. Dependent Claim 62

Claim 62 recites that generating the machine tool program and analyzing coordinate measurement data generated by execution of the machine tool program are performed by an application integrated within a control panel of the machine tool controller. The Final Office Action points to Figure 9 as teaching an application integrated within a control panel of a machine tool control. Neither Figure 9 nor its description in the specification teach or suggest the generation of a machine tool program of any kind by an application integrated within a control panel of the machine tool controller. In fact, Figure 1 and its description indicate that the NC program producing means (20) is separate from the NC apparatus (25).

In the Examiner's Answer, the Examiner points to column 4, lines 35-50 and specifically references the teaching that the NC program execution means (27) supplies a servo control signal to the servo control means (28), and thus, the machine tool (26) can be controlled in a feed drive control by the drive signal output from the servo control means (28). Appellants' argument regarding claim 62 is not that Figure 9 of Matsumiya does not teach <u>controlling</u> a machine tool with a machine tool program that is integrated within the control panel of the machine tool controller. Rather, Appellants' argument is that Figure 9 does not teach or suggest that the acts of <u>generating</u> a machine tool program (that includes instructions to control a machine tool to perform coordinate measurements) and analyzing coordinate measurement data generated by execution of the machine tool program using dimensional metrology analysis are performed by an application integrated within the control panel of the machine tool controller. Column 4, lines

35-50 of Matsumiya only teaches the <u>execution</u> of a machine tool program to <u>machine</u> a workpiece on a machine tool as opposed to performing coordinate measurements, as can be seen in the immediately subsequent portion of Matsumiya which states, "In the manner described above, the machine tool 26 executes desired operation element machining, working element machining, and process machining for a workpiece 30 mounted on a worktable, and completes the machining in the first chucking attitude of the workpiece 30." Thus, the limitations of claim 62 are neither disclosed nor suggested.

15. Dependent Claim 65

Appellants' argument regarding claim 65 also is mischaracterized. The Examiner's Answer states that Appellants argue that Matsumiya does not disclose that the machine tool program comprises combining a machine definition with a dimensional metrology path definition. In fact, Appellants' argument is that <u>the act of generating</u> the machine tool program comprises combining a machine definition with a dimensional metrology path definition. The Examiner points to Figures 3 and 7-9 and states that Matsumiya discloses a tool list definition and three dimensional coordinate measuring path definition, and that the measurement control apparatus 32 sends a command indicating measurement paths defined by the predetermined measurement program to the probe of the measuring machine (see column 9, lines 7-10). As conceded by the Examiner, the command is sent to the measuring machine, not the machine tool. Because the measurement control apparatus is sending a command to the probe of the <u>measuring machine</u>, which can only measure, an act of generating <u>a machine tool program</u> to perform a machining operation is not taught or suggested by the portion of Matsumiya cited by the Examiner. Thus, claim 65 is allowable.

16. Dependent Claim 69

In response to Appellants' argument that Matsumiya does not include any teaching or suggestion that the NC program is produced from a dimensional metrology program, the Examiner reproduces column 6, lines 38-49 of Matsumiya. This portion of Matsumiya is directed to converting the coordinate systems used for a machine tool program into the three-

dimensional coordinate systems for a measurement program on a measuring machine. This conversion of coordinate systems in Matsumiya occurs in a direction opposite to that of the translation recited in claim 69. That is, Matsumiya describes converting the coordinate systems of a machine tool program to the coordinate systems of a coordinate measurement machine, while the claim is directed to translating a dimensional metrology program (such as a coordinate measurement machine program) to a machine tool program. Accordingly, the Examiner's Answer does not address Appellants' arguments regarding the features of claim 69 and thus effectively concedes that they are correct.

17. Dependent Claim 70

Each of claims 22 and 49 recites that generation of the machine tool program comprises removing dimensional metrology program commands from the dimensional metrology program. In response, the Examiner points to column 5, lines 24-43 and reproduces column 5, lines 38-43, "[T]he machining shape information extracting division 34 extracts the quality information from the actual machining NC program and directly outputs the quality information to the measurement program producing division 36." This portion of Matsumiya is clearly directed to extracting information and not to removing commands. Furthermore, the information is extracted from a machining program and is sent to a measurement program in Matsumiya. It is not extracted from a dimensional metrology program and sent to machine tool program, as recited in claim 70. Because the Examiner is unable to point to any teaching or suggestion of removing dimensional metrology commands from a dimensional metrology program to generate a machine tool program, the Examiner implicitly concedes that Matsumiya does not teach this feature.

18. Independent Claim 78

In response to Appellants' arguments regarding independent claim 78, the Examiner again reproduces column 8, lines 12-44 of Matsumiya without explanation. Independent claim 78 recites, among other limitations, a system comprising means for generating a machine tool program including instructions to control a machine tool to perform coordinate measurements,

wherein the machine tool program is executable on a machine tool controller. Column 8, lines 12-44, however, contains no disclosure or suggestion whatsoever regarding performing coordinate measurement on a machine tool, as discussed. Accordingly, the Examiner has implicitly conceded that Matsumiya does not disclose means for generating a machine tool program including instructions to control a machine tool to perform coordinate measurements.

19. Independent Claim 79 and Dependent Claims 80-83

In response to Appellants' arguments regarding these claims, which recite generating, from a dimensional metrology program, a self-contained machine tool program that is executable on a machine tool controller to perform coordinate measurements without interaction with a program generator, the Examiner again reproduces without comment column 8, lines 12-44 of Matsumiya. As discussed, column 8, lines 12-44, contains no disclosure or suggestion whatsoever regarding a machine tool program that is executable to perform coordinate measurements on a machine tool. Accordingly, the Examiner has conceded that Matsumiya does not disclose generating a machine tool program that is executable on a machine tool controller to perform coordinate measurements without interaction with a program generator.

20. Independent Claim 84 and Dependent Claim 85

Independent claim 84 recites a method of generating, from a dimensional metrology program, a machine tool program including instructions to control a machine tool to perform coordinate measurements. Once again, the Examiner simply reproduces column 8, lines 12-44 without explanation. As noted, column 8, lines 12-44, contains no disclosure or suggestion whatsoever regarding a machine tool program including instructions to control a machine tool to perform coordinate measurements on a machine tool Thus, the Examiner has implicitly conceded that Matsumiya does not disclose generating a program to control a machine tool to perform coordinate measurements.

Claim 84 further recites that the act of generating the machine tool program is performed independently of any measurement data received from a machine tool controller. No reference
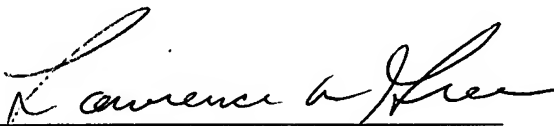
to this claim limitation was made in the Final Office Action or in the Examiner's Answer. Accordingly, this limitation should be found to distinguish over Matsumiya.

CONCLUSION

Appellants respectfully request that the Board of Appeals reverse the Examiner's rejections under 35 U.S.C. §102(e) of claims 1-93. It is requested that a Notice of Allowance be granted in this case.

Dated: January _3_, 2007   Respectfully submitted,

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